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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/695,579

10/28/2003

Chan-Soo Hwang

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EXAMINER

ETTEHADIEH, ASLAN

ART UNIT

PAPER NUMBER

2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	Application No. 10/695,579	Applicant(s) HWANG ET AL.	
	Examiner Aslan Ettehadieh	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☒ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of claims 1 – 12 (group 1) in the reply filed on 02/21/2007 is acknowledged. Claims 13 – 20 are now cancelled. Office action address claims 1 – 12.

### ***NOTE***

2. Please note that all references made herein to the instant application are made with respect to paragraphs of U.S. Patent Application Publication No. 2004/0146025, the publication corresponding to the instant application.

### ***Specification***

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

4. Claims 6 – 7 and 12 are objected to because of the following informalities: the period that should be at the end of the sentence is located in the parentheses of the zero value. Appropriate correction is required.

### ***Request for Information***

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

The information is required to enter in the record the art suggested by the applicant as relevant to this examination in figures 1 and 4 and paragraphs 10 – 12 and 17 – 18.

This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 recites the limitation "the modulation symbol streams output". There is insufficient antecedent basis for this limitation in the claim. Does the applicant mean "the modulation bit streams output", "a modulation symbol streams output", or etc. Also, this causes an antecedent basis problem for the limitation of "the punctured modulation symbol".

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

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F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1 – 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 14 of copending Application No. 10/695493. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1 – 14 of copending Application No. 10/695493 does not disclose a sequence generator for generating a pilot sequence for the channel estimation, however, it would have been obvious to one skilled in the art at the time of invention was made to have a sequence generator for generating a pilot sequence for the channel estimation in the filed of applicant's invention in order to maintain low error rate. The rejection of claim 1 is representative of claims 2 – 12.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claims 1 – 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 18 of copending Application No. 10/694197 in view of Walton et al. (US 2004/0156328). Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1 – 18 of copending Application No. 10/695493 does not

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disclose a sequence generator for generating a pilot sequence for the channel estimation, however, it would have been obvious to one skilled in the art at the time of invention was made to have a sequence generator for generating a pilot sequence for the channel estimation in the filed of applicant's invention in order to maintain low error rate. Also, they are not patentably distinct from each other because claims 1 – 18 of copending Application No. 10/695493 does not disclose M multiplexers individually connected to the M transmission antennas, for multiplexing signals output from the M puncturers and the sequence inserted in the punctured modulation symbol, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to multiple transmitting paths, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Walton discloses an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream (figure 8 elements 810x – 810y, 120x – 120y, figure 9 elements 920, 924, 926, Pilot Symbols, paragraphs 106 – 116), where it would have been obvious to one skilled in the art at the time of invention was made to use an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream as taught by Walton to facilitate random access ability in the wireless system (paragraph 4). The rejection of claim 1 is representative of claims 2 – 12.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 102***

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. Claims 1 – 5, and 8 – 11 rejected under 35 U.S.C. 102(a) as being anticipated by Shibutani (US 2003/0002518).

9. Regarding claim 1, Shibutani discloses an apparatus for transmitting a sequence for channel estimation in a mobile communication system including M transmission antennas, P encoders for receiving P information bit streams and encoding the received P information bit streams with a space-time trellis code (STTC), and M modulators for modulating information bit streams output from the P encoders in a predetermined modulation scheme and outputting modulation symbol streams, the apparatus comprising: a sequence generator for generating the sequence for the channel estimation (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46); M puncturers for puncturing at least one modulation symbol in a predetermined position for each of the modulation symbol streams output from the M modulators (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46); and M multiplexers individually connected to the M transmission antennas, for multiplexing signals output from the M puncturers and the sequence inserted in the punctured modulation symbol (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46).

10. Regarding claims 2 and 9, Shibutani further discloses wherein the M puncturers each have a same number of modulation symbols where the sequence is inserted, for the modulation symbol streams output from the M modulators (paragraphs 43 – 46).

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11. Regarding claims 3 and 10, Shibutani further discloses wherein the M puncturers each periodically repeat a position where the sequence is inserted, for the modulation symbol streams output from the M modulators (paragraphs 43, 51).
12. Regarding claims 4 and 11, Shibutani further discloses wherein the sequence is a pilot sequence (paragraphs 6, 14, 43 – 46).
13. Regarding claim 8, Shibutani discloses a method for transmitting a sequence for channel estimation in a mobile communication system including M transmission antennas, P encoders for receiving P information bit streams and encoding the received P information bit streams with a space-time trellis code (STTC), and M modulators for modulating information bit streams output from the P encoders in a predetermined modulation scheme and outputting modulation symbol streams, the method comprising the steps of: generating the sequence for the channel estimation (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46); and transmitting the sequence in substitute for at least one modulation symbol in a predetermined position through the M transmission antennas, for each of the modulation symbol streams output from the M modulators (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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14. Claims 6 – 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibutani (US 2003/0002518) in view of Walton et al. (US 2004/0156328)

15. Regarding claims 6 – 7 and 12, Shibutani discloses a position where the sequence is inserted is determined according to a puncturing matrix P1 and the sequence is inserted in a position of an element "0." (figures 1 and 4, figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46). Shibutani is not explicit about wherein if M is 2 and a number of symbols constituting the modulation symbol stream is 4, a puncturing matrix defined as a specific matrix.

In the same field of endeavor, however, Walton discloses an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream (figure 8 elements 810x – 810y, 120x – 120y, figure 9 elements 920, 924, 926, Pilot Symbols, paragraphs 106 – 116).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream as taught by Walton in the system of Shibutani to facilitate random access ability in the wireless system (paragraph 4).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use any puncturing pattern. Applicant has not disclosed that the specific puncturing pattern provides an advantage, is used for a particular purpose or

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solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with any puncturing pattern.


Therefore, it would have been obvious to use any puncturing pattern to one of ordinary skill in this art to modify any puncturing pattern to the claimed puncturing pattern to provide proper, rate matching, rate to fit the physical channel.

**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aslan Ettehadieh whose telephone number is (571) 272-8729. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER

AE

Aslan Ettehadieh  
Examiner  
Art Unit 2611